ABSTRACT

THE DEGRADATION OF *Staphylococcus aureus* EXTRACELLULER POLYMERIC SUBSTANCE (EPS) USING 405 NM DIODE LASER AND CHLOROPHYLL

Background: *Staphylococcus aureus* is one of the causative bacteria from root canal infections and is one of the persistent bacteria that can cause apical periodontitis. Biofilm formation is defense mechanism of bacteria, main composition of biofilm is *extraceluller polymeric substance* (EPS). Photodynamic therapy is an alternative to eliminate bacterial biofilm. **Purpose:** This study aimed to determined the degradation of *Staphylococcus aureus* EPS using photodynamic therapy with 405nm diode laser and photosensitizer chlorophyll. **Method:** This study used *Staphylococcus aureus,* diode laser 405nm as a light source and chlorophyll as photosensitizer. Five different groups were analyzed: control group, chlorophyll group, chlorophyll + laser 90", chlorophyll + laser 105", and chlorophyll + laser 120". The EPS was determined using Confocal Laser Scanning Microscope (CLSM). **Result:** Irradiation duration affects degradation of EPS. Group chlorophyll + laser 120" showed significant EPS degradation compared to other groups ($p<0.05$). **Conclusion:** Photodymanic theraphy using laser diode 405nm and fotosensitizer chlorophyll 120" could degrade *Staphylococcus aureus* EPS.

Keywords : Photodynamic theraphy, Enterococcus faecalis, EPS, chlorophyll